

U.S. Patent Application Serial No. 10/768,180
Response filed February 23, 2007
Reply to OA dated August 29, 2006

AMENDMENTS TO THE CLAIMS

Please amend claims 1, 4, 5, 6-12 and 20, as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): An electronic device which comprises ~~one or more~~ a functional ~~elements~~ element consisting of a high molecular weight material which has a steric structure containing one or more three-dimensionally disposed modifying functional groups, said structure being known or predictable, in which

said high molecular weight material is a biopolymer, a synthetic polymer or a combination thereof, and

said modifying functional groups are selected from the group consisting of positive hole-transporting functional groups, electron-transporting functional groups and a combination thereof.

Claim 2 (Original): An electronic device as defined in claim 1, in which said biopolymer is DNA, RNA, a hybrid of DNA and RNA, proteins, saccharides or a composite thereof.

Claim 3 (Withdrawn): An electronic device as defined in claim 1, in which said synthetic polymer is peptide DNA, guanidine DNA or a composite thereof.

Claim 4 (Currently Amended): An electronic device as defined in claim 1, in which said positive hole-transporting functional group is ~~TPAC~~ 1,1-bis[4-[N,N'-di(p-tolyl)amino]phenyl]cyclohexane, ~~TPD~~ N,N'-diphenyl-N,N'-di(m-tolyl)benzidine, phenothiazine, ~~TTF~~ tetrathiafulvalene or fullerene.

Claim 5 (Withdrawn): An electronic device as defined in claim 1, in which said electron-transporting functional group is ~~BNB~~ 2,5-bis(1-naphtyl)-1,3,4-oxadiazole, ~~PBD~~ 2-(4-tert-butylphenyl)-5-(4-biphenyl)-1,3,4-oxadiazole, anthraquinone, ~~TCNQ~~ tetracyanoquinodimethane or porphyrine.

Claim 6 (Currently Amended): An electronic device as defined in claim 1 ~~any one of claims 1 to 5~~, in which said functional element is an electrically conductive wire.

Claim 7 (Withdrawn): An electronic device as defined in claim 1 ~~any one of claims 1 to 5~~, in which said functional element is a circuit consisting of an electrically conductive wire.

Claim 8 (Withdrawn): An electronic device as defined in claim 1 ~~any one of claims 1 to 5~~, in which said functional element is a resistor consisting of an electrically conductive wire.

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Claim 9 (Withdrawn): An electronic device as defined in claim 1 ~~any one of claims 1 to 5~~, in which said functional element is a diode consisting of two or more electrically conductive wires.

Claim 10 (Withdrawn): An electronic device as defined in claim 1 ~~any one of claims 1 to 5~~, in which said functional element is a capacitor consisting of two or more electrically conductive wires.

Claim 11 (Currently Amended): An electronic device as defined in claim 1 ~~any one of claims 1 to 5~~, in which said functional element is a transistor consisting of two or more electrically conductive wires.

Claim 12 (Currently Amended): An electronic device as defined in any one of claims 1 to 5, in which said functional element is an electrically conductive wire wherein ~~produced upon periodically introducing~~ said positive hole-transporting functional groups and/or said electron-transporting functional groups to said biopolymer and/or said synthetic polymer are periodically contained therein.

Claim 13 (Withdrawn): An electronic device as defined in claim 12, in which said electrically conductive wire is incorporated therein as a circuit of the device.

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Claim 14 (Withdrawn): An electronic device as defined in claim 12, in which said electrically conductive wire is incorporated therein as a resistor, and the resistor has a specific resistance capable of being controlled by varying a density of said modifying functional groups.

Claim 15 (Withdrawn): An electronic device as defined in claim 12, in which said electrically conductive wire is incorporated therein as a diode, and the diode is in the form of a block polymer wherein two or more of said electrically conductive wires are connected in series.

Claim 16 (Withdrawn): An electronic device as defined in claim 15, in which said diode is a photodiode, and said photodiode has introduced in a conjunction portion thereof a functional group capable of controlling a discharge or introduction of electrons by its optical response.

Claim 17 (Withdrawn): An electronic device as defined in claim 15, in which said diode is a light-emitting diode, and said light-emitting diode has introduced in a conjunction portion thereof a functional group capable of generating light emission by its electromotive force.

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Claim 18 (Withdrawn): An electronic device as defined in claim 12, in which said electrically conductive wire is incorporated therein as a capacitor, and the capacitor is in the form of a block polymer wherein at least a part of the segments of said electrically conductive wire has an introduced insulating arrangement and said block polymer has a condition capable of being easily electrically charged in a neighborhood of the insulating arrangement.

Claim 19 (Original): An electronic device as defined in claim 12, in which said electrically conductive wire is incorporated therein as a bipolar transistor, and the bipolar transistor is in the form of a block polymer wherein three of said electrically conductive wires are alternately connected in series to form a PNP or NPN junction and said block polymer has said biopolymer and/or said synthetic polymer branched from a central segment thereof.

Claim 20 (Currently Amended): An electronic device as defined in claim 11, in which said transistor is a field effect transistor[[,]] and wherein an electrical output of the field effect transistor is ~~can be~~ controlled by applying a predetermined level of the electric field to said device from an outside of said device.